

Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 1/11/2016 (Developing El Nino Condition)

Lake Okeechobee Net Inflow Outlook:

The Lake Okeechobee Net Inflow Outlook has been computed using 4 methods: Croley's method¹, the SFWMD empirical method², a sub-sampling of El Nino years³ and a sub-sampling of warm years of the Atlantic Multi-decadal Oscillation (AMO) in combination with El Nino ENSO years⁴. The results for Croley's method and the SFWMD empirical method are based on the [CPC Outlook](#).

Table of the Lake Okeechobee Net Inflow Outlooks in feet of equivalent depth. All methods are updated on a weekly basis with observed net inflow for the current month.

Season	Croley's Method ^{1*}		SFWMD Empirical Method ²		Sub-sampling of El Nino ENSO Years ³		Sub-sampling of AMO Warm + El Nino ENSO Years ⁴	
	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition
Current (Jan-Jun)	N/A	N/A	0.65	Dry	1.51	Wet	2.07	Very Wet
Multi Seasonal (Jan-Oct)	N/A	N/A	2.84	Wet	3.53	Wet	5.33	Very Wet

***Croley's Method Not Produced For This Report**

See [Seasonal](#) and [Multi-Seasonal](#) tables for the classification of Lake Okeechobee Outlooks.

The recommended methods and values for estimating the Lake Okeechobee Net Inflow Outlook are shaded and should be used in the LORS2008 Release Guidance Flow Charts.

[Tributary Hydrologic Conditions Graph:](#)

2005 cfs 14-day running average for Lake Okeechobee Net Inflow through 1/11/2016. According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Normal.

-1.06 for Palmer Index on 1/10/2016.

According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Normal.

The wetter of the two conditions above is **Normal**.

[LORS2008 Classification Tables:](#)

Lake Okeechobee Stage on 1/11/2016

Lake Okeechobee Stage: **14.80 feet**

[USACE Report for Lake Okeechobee](#)

[Lake Okeechobee Stage Hydrograph](#)

Lake Okeechobee Management Zone/Band		Bottom Elevation (feet, NGVD)	Current Lake Stage
High Lake Management Band		17.25	
Operational Band	High sub-band	16.84	
	Intermediate sub-band	16.17	
	Low sub-band	13.90	← 14.80
Base Flow sub-band		12.60	
Beneficial Use sub-band		12.10	
Water Shortage Management Band			

[Part C of LORS2008: Discharge to WCA's](#)

Release Guidance Flow Chart Outcome: Up to Maximum Releases to the WCAs if Desirable or with Minimum Everglades Impacts

[Part D of LORS2008: Discharge to Tidewater](#)

Release Guidance Flow Chart Outcome: S-79 up to 3000 cfs and S-80 up to 1170 cfs

Technical Input Summaries from:

- [Lake Okeechobee Division](#)
- [Coastal Ecosystems](#)
- [Everglades Ecosystems Division](#)
- [Water Supply Department](#)
- [Water Resource Management Release Recommendation](#)
- [Kissimmee Watershed Environmental Conditions](#)
- [Operations Department](#)

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LORS2008 Implementation on 1/11/2016 (ENSO El Nino Condition):

Water Supply Department Technical Input

Water Supply Outlook:

District wide, Raindar rainfall 1.02 inches for the week ending 1/11/2016. Lake stage on 1/11/2016 is 14.80 ft, up 0.09 ft from last week.

The updated January 2016 SFWMM Dynamic Position Analysis [percentile graph](#) and [tracking chart](#) for Lake Okeechobee show that the lake stage is in the Low Operational Sub-Band.

The LORS2008 tributary [indices](#) are classified as **Normal**. The PDSI indicates normal condition and the LONIN is Normal. The classification is based on the wetter of the two.

Water Supply Risk Evaluation

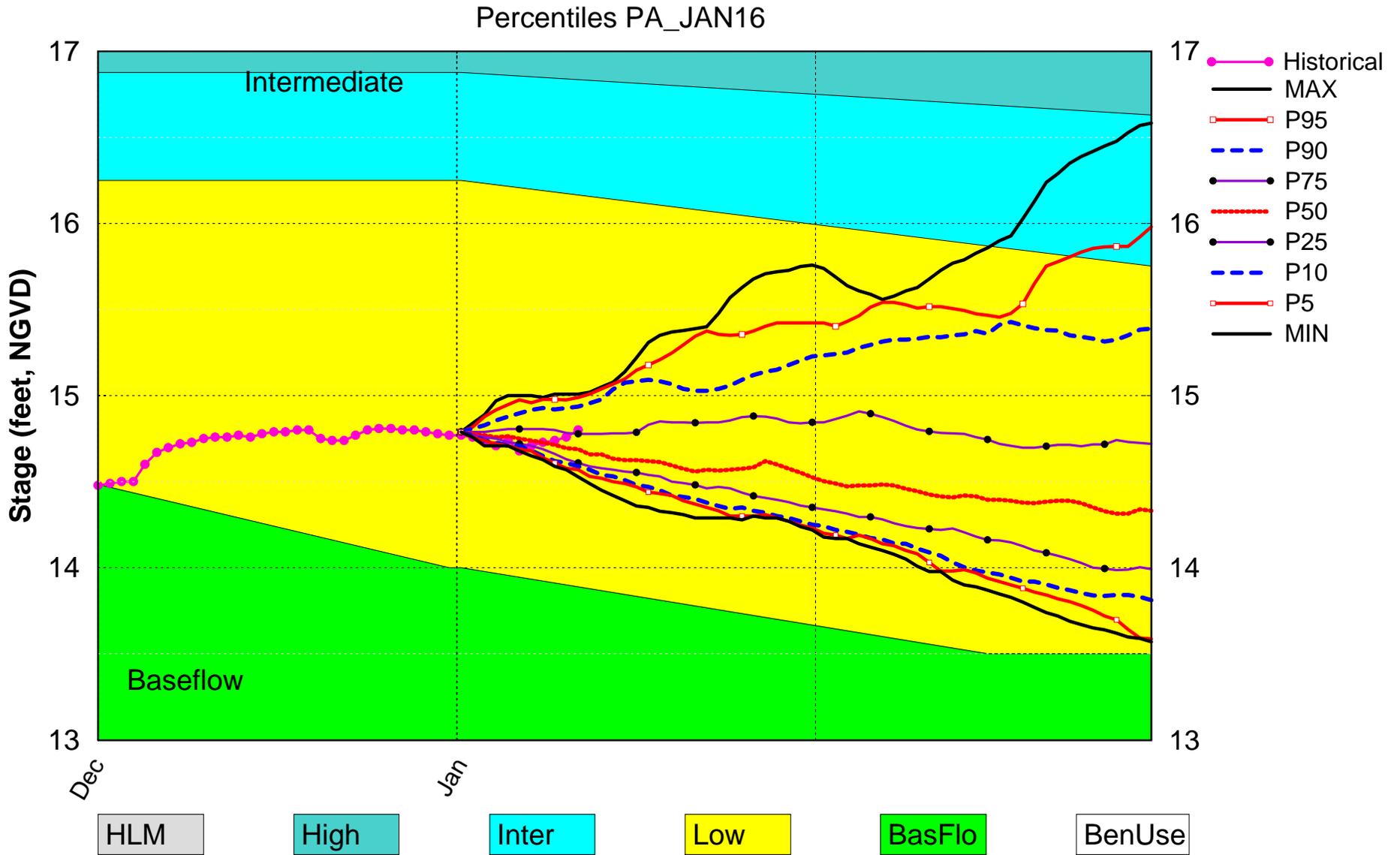
Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Low Flow Sub-Band	M
	Palmer Index for LOK Tributary Conditions	-1.06 (Dry)	M
	CPC Precipitation Outlook	1 month: Above Normal	L
		3 months: Above Normal	L
	LOK Seasonal Net Inflow Forecast	1.51 ft (Normal to Extremely Wet)	L
	AMO warm/El Nino		
	LOK Multi-Seasonal Net Inflow Forecast	3.53 ft (Wet)	L
AMO warm/El Nino			
WCAs	WCA 1: Site 1-7, Site 1-8T, & Site 1-9 Average	Above Line 1 (17.15 ft)	L
	WCA 2A: Site 2-17 HW	Above Line1 (12.24 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Above Line 1 (10.54 ft)	L
LEC	Service Area 1	Year-Round Irrigation Rule in effect	L
	Service Area 2	Year-Round Irrigation Rule in effect	L
	Service Area 3	Year-Round Irrigation Rule in effect	L

Note: The water supply risk classification based on the Palmer index, as well as the LOK seasonal and multi-seasonal net inflow forecasts use slightly different classification intervals than those used by the 2008-LORS for classifying the tributary hydrologic condition (THC).

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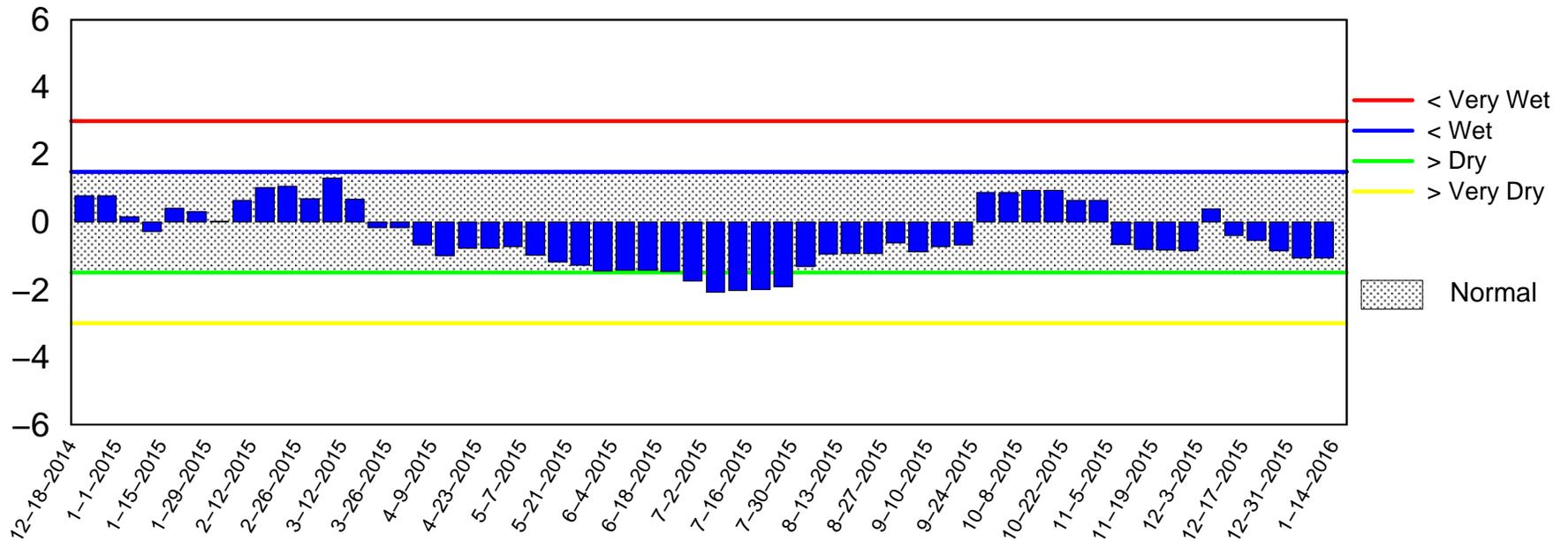
Lake Okeechobee SFWMM Jan 2016 Dynamic Position Analysis



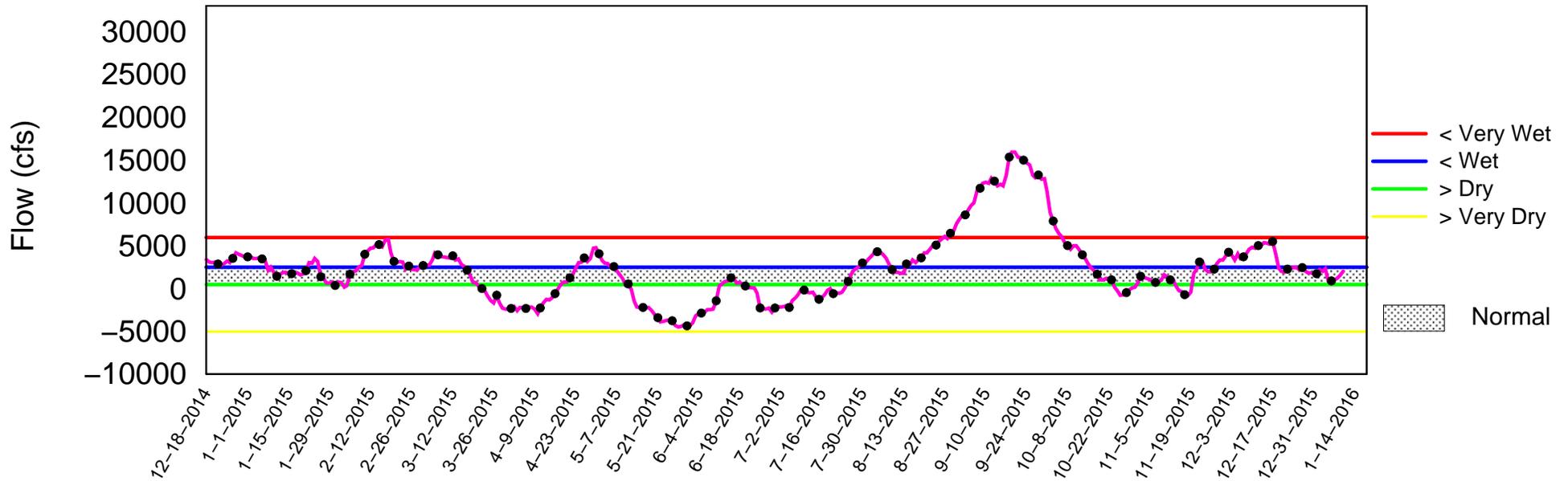
(See assumptions on the Position Analysis Results website)

Tributary Basin Condition Indicators as of January 11 2016

Palmer Index



Lake Okeechobee Net Inflow (LONIN) 14-day Running Average



Mon Jan 11 15:39:31 EST 2016

2008 LORS

Part C: Establish Allowable Lake Okeechobee Releases to the Water Conservation Areas

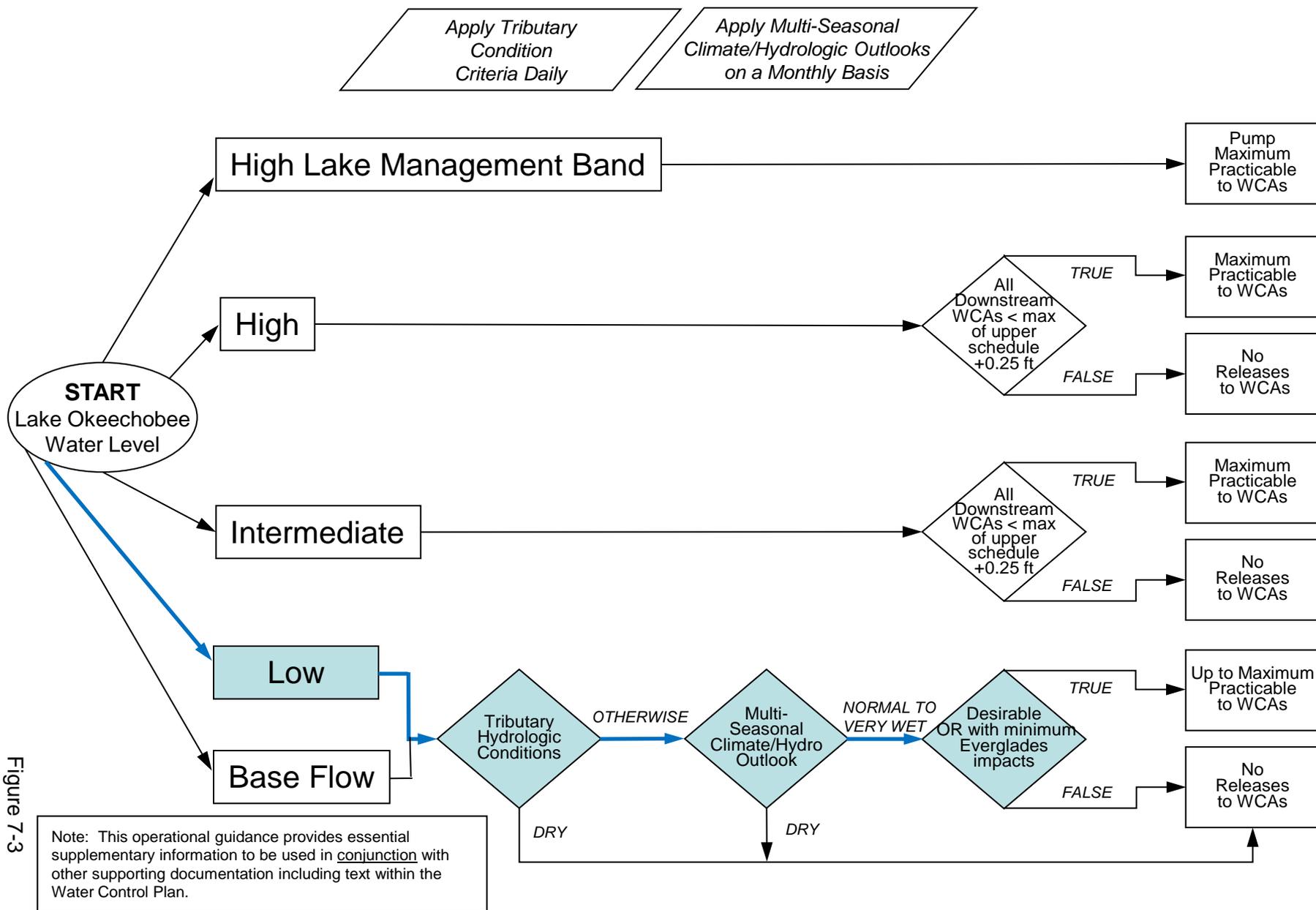


Figure 7-3

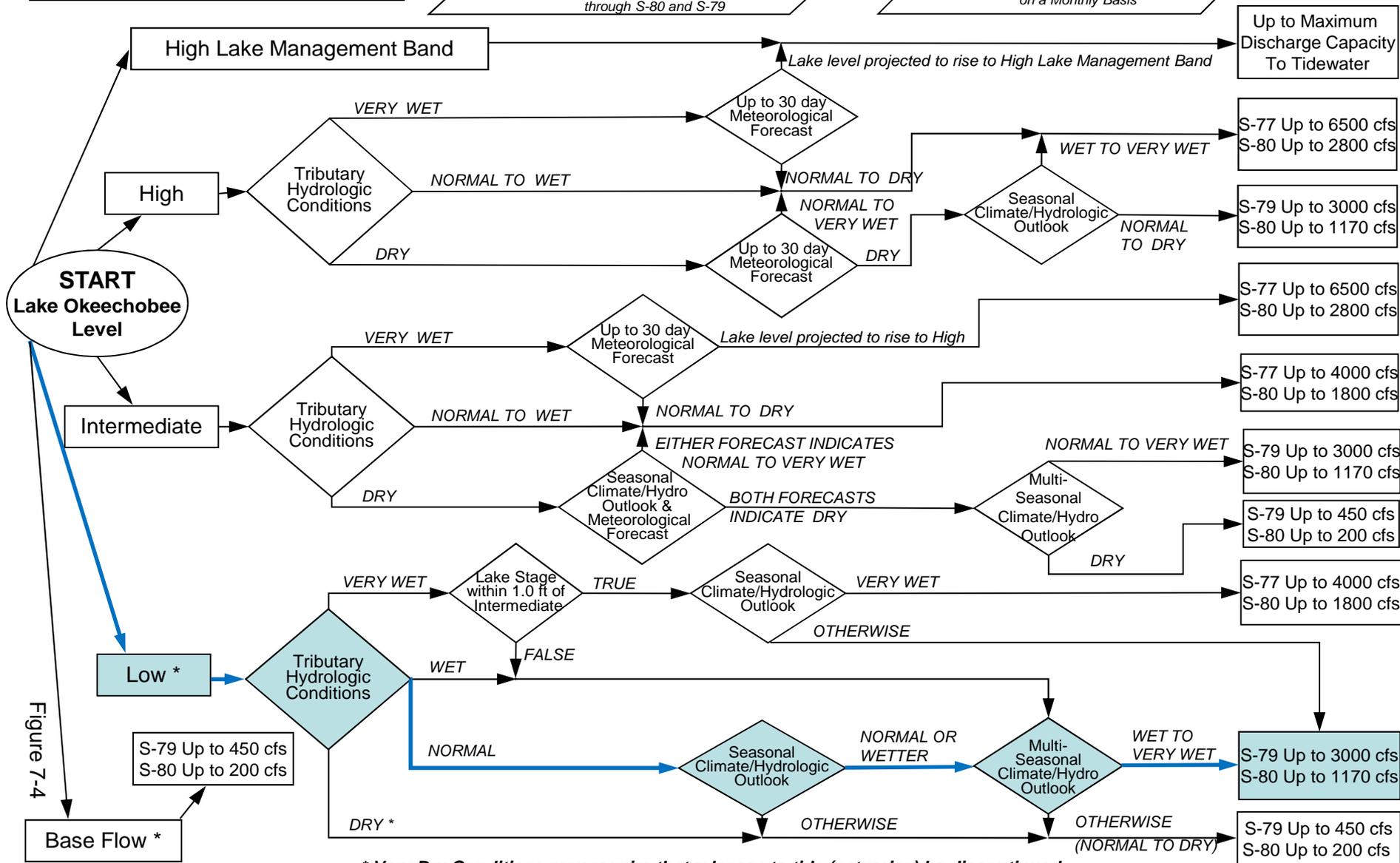
2008 LORS

Part D: Establish Allowable Lake Okeechobee Releases to Tide (Estuaries)

Note: This operational guidance provides essential supplementary information to be used in conjunction with other supporting documentation including text within the Water Control Plan.

When conducting Base Flow releases, flows can be distributed East and West up to 650 cfs as needed to minimize impacts or provide benefits through S-80 and S-79

Apply Meteorological Forecasts on a Weekly Basis; apply Seasonal and Multi-Seasonal Climate/Hydrologic Outlooks on a Monthly Basis



* Very Dry Conditions may require that releases to tide (estuaries) be discontinued

Figure 7-4

2008 LORS FORECAST

Part C: Establish Allowable Lake Okeechobee Releases to the Water Conservation Areas

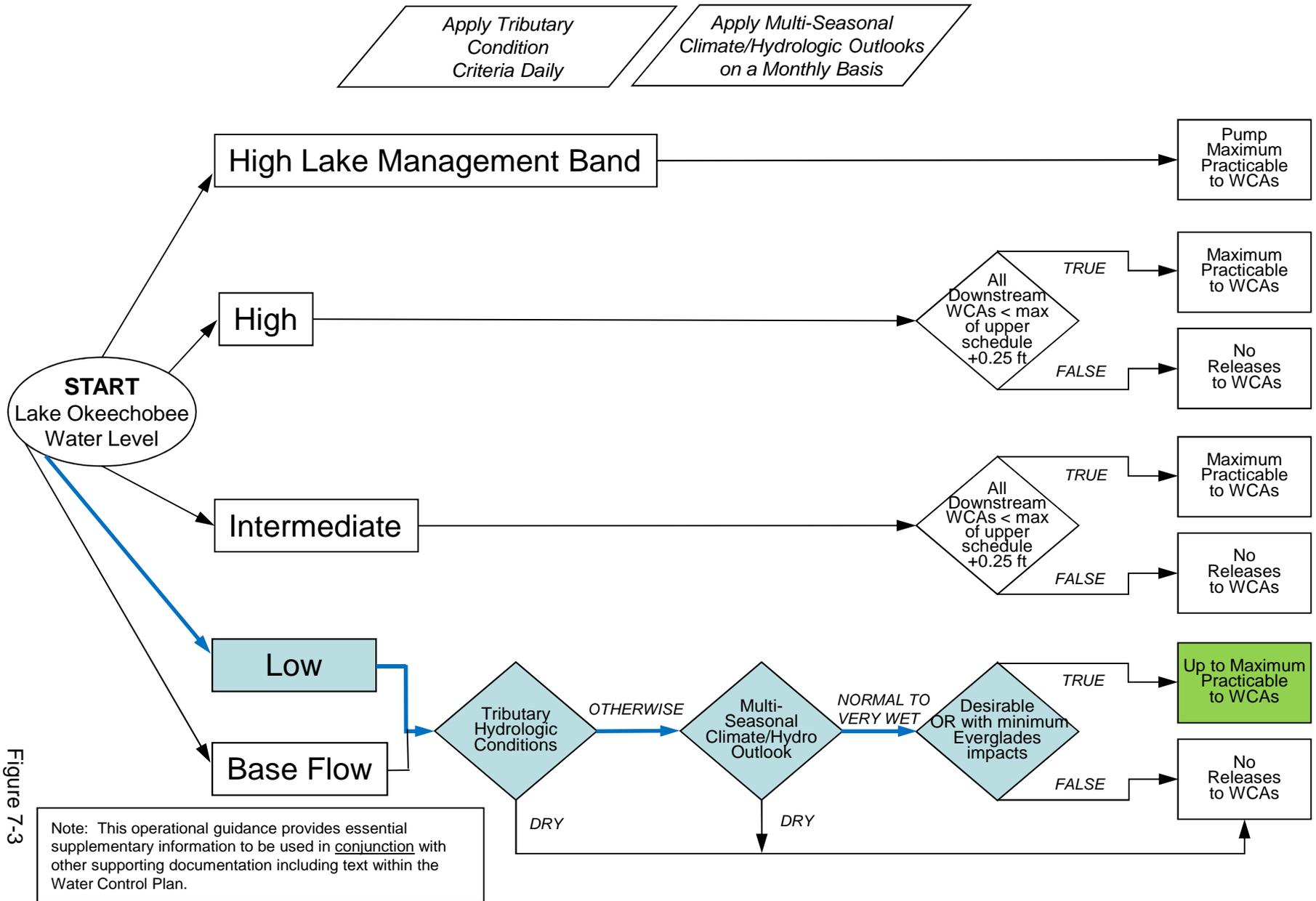


Figure 7-3

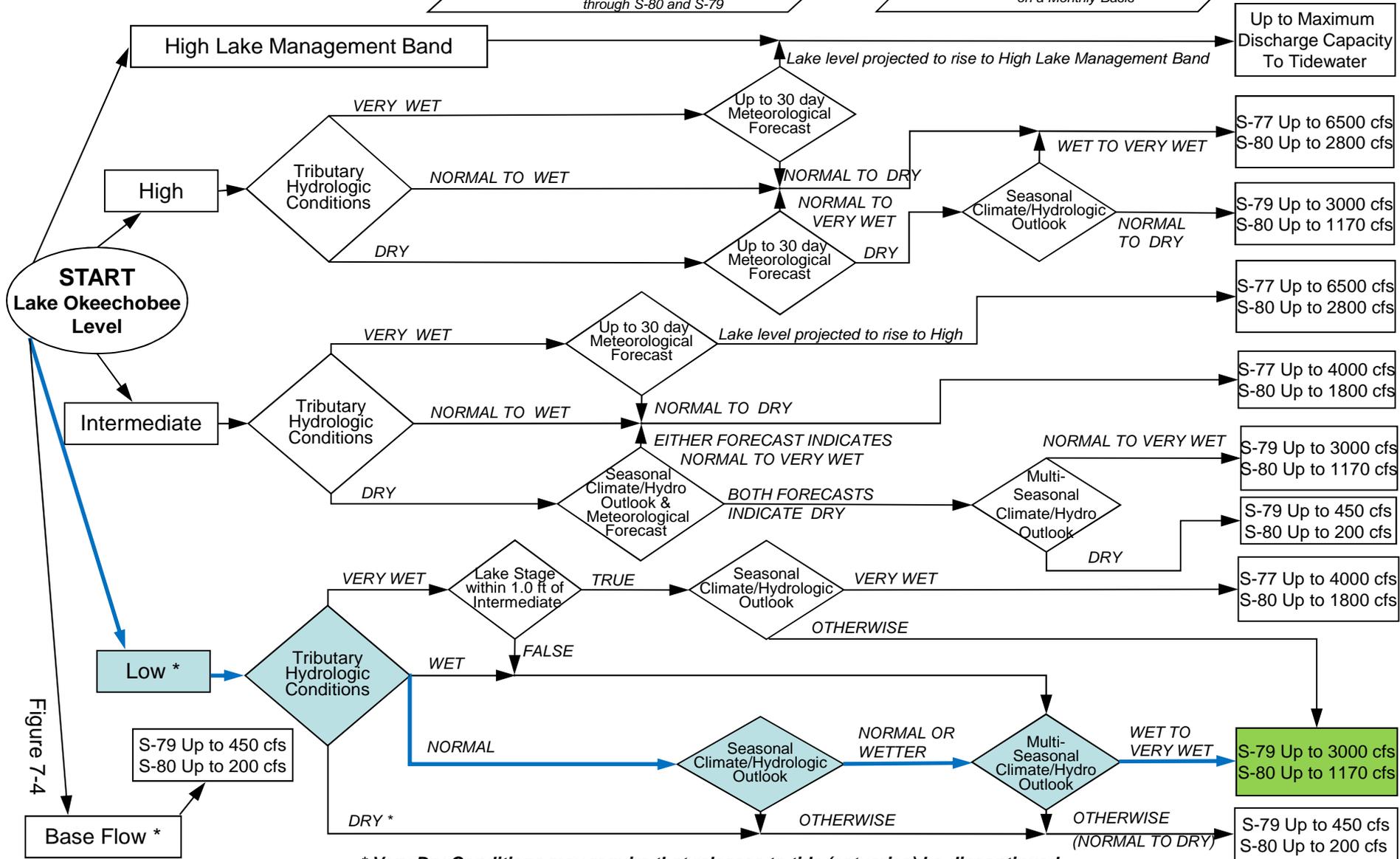
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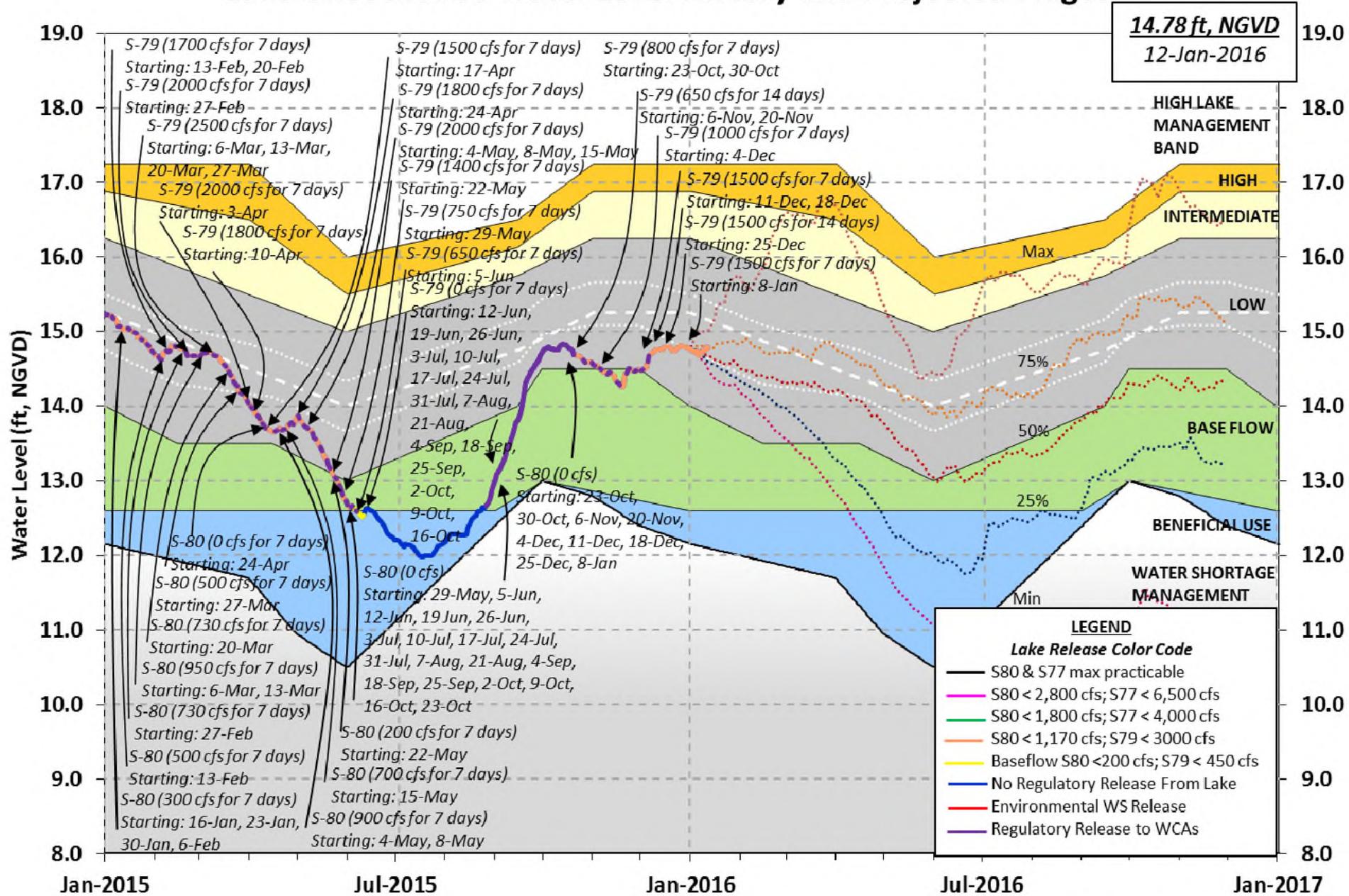
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Figure 7-4

Lake Okeechobee Water Level History and Projected Stages



LORS-2008

Adopted by USACE 28-April-2008

Projected Stage Percentiles From
SFWMD-HESM Position Analysis

C5:		-NR-	-NR-	-NR-	-NR-	-NR-				
South Shore										
S4 Pumps:	12.47	14.89	0	0	0	0				(cfs)
S169:	14.95	12.47	0	0.0	0.0	0.0				
S310:	14.90		-57							
S3 Pumps:	10.23	15.06	0	0	0	0				(cfs)
S354:	15.06	10.23	0	0.0	0.0					
S2 Pumps:	10.06	15.04	0	0	0	0	0			(cfs)
S351:	15.04	10.06	0	0.0	0.0	0.0				
S352:	15.19	9.56	0	0.0	0.0					
C10A:	-NR-	14.35		0.0	8.5	8.5	8.5	8.5		
L8 Canal PT		14.15	182							
S351 and S352 Temporary Pumps/S354 Spillway										
S351:	10.06	15.04	0	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-	
S352:	9.56	15.19	0	-NR-	-NR-	-NR-	-NR-			
S354:	10.23	15.06	0	-NR-	-NR-	-NR-	-NR-			
Caloosahatchee River (S77, S78, S79)										
S47B:	14.90	11.37		0.0	0.0					
S47D:	11.38	11.41	-41	5.0						
S77:	Spillway and Sector Flow:									
	-NR-	-NR-	-NR-	1.0	2.5	2.5	1.0			
	Flow Due to Lockages+:									
			-NR-							
S77 Below USGS Flow Gage			641							
S78:	Spillway and Sector Flow:									
	11.26	2.81	971	0.5	0.5	0.5	0.5			
	Flow Due to Lockages+:									
			11							
S79:	Spillway and Sector Flow:									
	2.97	1.14	2514	1.0	1.0	2.0	2.0	1.0	1.0	1.0
1.0	Flow Due to Lockages+:									
			5							
	Percent of flow from S77									
			-NR-%							
	Chloride (ppm)									
			60							
St. Lucie Canal (S308, S80)										
S308:	Spillway and Sector Flow:									
	14.82	14.12	0	0.0	0.0	0.0	0.0			
	Flow Due to Lockages+:									
			0							
S308 Below USGS Flow Gage			-170							
S153:	18.86	13.95	61	0.0	0.0					
S80:	Spillway and Sector Flow:									
	14.17	1.79	297	0.0	0.0	0.2	0.0	0.2	0.0	0.0

Flow Due to Lockages+: 30
 Percent of flow from S308 0%

Steele Point Top Salinity (mg/ml) ****
 Steele Point Bottom Salinity (mg/ml) ****

Speedy Point Top Salinity (mg/ml) ****
 Speedy Point Bottom Salinity (mg/ml) ****

+ Flow Due to lockages is computed utilizing average daily headwater and tailwater along with total number of lockages for the day to calculate a volume which is then converted to an average discharge in cfs.

					----- Wind ---	
Daily Precipitation Totals	1-Day	3-Day	7-Day	Direction		
Speed	(inches)	(inches)	(inches)	(Degø)		
(mph)						
S133 Pump Station:	-NR-	0.41	0.59			
S193:	-NR-	0.00	0.00	-NR-	-NR-	
Okeechobee Field Station:	-NR-	0.00	0.00			
S135 Pump Station:	-NR-	0.30	0.44			
S127 Pump Station:	-NR-	0.40	0.51			
S129 Pump Station:	-NR-	0.40	0.44			
S131 Pump Station:	-NR-	0.42	0.45			
S77:	0.21	0.87	0.87	-NR-	-NR-	
S78:	1004.42	5168.81	6939.51	318	1	
S79:	0.58	1.39	1.39	38	1	
S4 Pump Station:	-NR-	0.00	0.00			
Clewiston Field Station:	-NR-	0.00	0.00			
S3 Pump Station:	-NR-	0.07	0.13			
S2 Pump Station:	-NR-	0.07	0.18			
S308:	*****	*****	*****	316	14	
S80:	0.01	0.36	0.58	32	2	
Okeechobee Average	*****	6690.30	*****			
(Sites S78, S79 and S80 not included)						

Oke Nexrad Basin Avg	0.14	0.82	0.86			

Okeechobee Lake Elevations	10 JAN 2016	14.80 Difference from
10JAN16		
10JAN16 -1 Day =	09 JAN 2016	14.76 -0.04
10JAN16 -2 Days =	08 JAN 2016	14.74 -0.06
10JAN16 -3 Days =	07 JAN 2016	14.73 -0.07
10JAN16 -4 Days =	06 JAN 2016	14.71 -0.09
10JAN16 -5 Days =	05 JAN 2016	14.68 -0.12
10JAN16 -6 Days =	04 JAN 2016	14.74 -0.06
10JAN16 -7 Days =	03 JAN 2016	14.71 -0.09
10JAN16 -30 Days =	11 DEC 2015	14.76 -0.04
10JAN16 -1 Year =	10 JAN 2015	15.04 0.24
10JAN16 -2 Year =	10 JAN 2014	14.03 -0.77

Long Term Mean 30day Avearge ET for Lake Alfred (Inches) = -NR-

Lake Okeechobee Net Inflow (LONIN)

		Average Flow over the previous 14 days			Avg-Daily Flow
10JAN16	Today =	10 JAN 2016	674	MON	-NR-
10JAN16	-1 Day =	09 JAN 2016	774	SUN	5954
10JAN16	-2 Days =	08 JAN 2016	325	SAT	2948
10JAN16	-3 Days =	07 JAN 2016	180	FRI	4428
10JAN16	-4 Days =	06 JAN 2016	38	THU	6535
10JAN16	-5 Days =	05 JAN 2016	45	WED	-12330
10JAN16	-6 Days =	04 JAN 2016	1439	TUE	7272
10JAN16	-7 Days =	03 JAN 2016	1046	MON	-2714
10JAN16	-8 Days =	02 JAN 2016	1224	SUN	-3887
10JAN16	-9 Days =	01 JAN 2016	857	SAT	-63
10JAN16	-10 Days =	31 DEC 2015	919	FRI	1776
10JAN16	-11 Days =	30 DEC 2015	1002	THU	-208
10JAN16	-12 Days =	29 DEC 2015	1047	WED	-148
10JAN16	-13 Days =	28 DEC 2015	1243	TUE	-802

S65E

		Average Flow over previous 14 days			Avg-Daily Flow
10JAN16	Today=	10 JAN 2016	576	MON	989
10JAN16	-1 Day =	09 JAN 2016	533	SUN	800
10JAN16	-2 Days =	08 JAN 2016	528	SAT	544
10JAN16	-3 Days =	07 JAN 2016	528	FRI	594
10JAN16	-4 Days =	06 JAN 2016	536	THU	579
10JAN16	-5 Days =	05 JAN 2016	543	WED	603
10JAN16	-6 Days =	04 JAN 2016	542	TUE	528
10JAN16	-7 Days =	03 JAN 2016	539	MON	468
10JAN16	-8 Days =	02 JAN 2016	554	SUN	495
10JAN16	-9 Days =	01 JAN 2016	571	SAT	477
10JAN16	-10 Days =	31 DEC 2015	590	FRI	420
10JAN16	-11 Days =	30 DEC 2015	612	THU	661
10JAN16	-12 Days =	29 DEC 2015	628	WED	415
10JAN16	-13 Days =	28 DEC 2015	642	TUE	488

Lake Okeechobee Outlets Last 14 Days

DATE	S-77	S-77	Below S-77	S-78	S-78	S-79
	Discharge (0700-2100) (AC-FT)	Discharge (ALL DAY) (AC-FT)	Discharge (ALL-DAY) (AC-FT)	Discharge (0700-2100) (AC-FT)	Discharge (ALL DAY) (AC-FT)	Discharge (ALL DAY) (AC-FT)
10 JAN 2016	-NR-	-NR-	1272	-NR-	1946	4995
09 JAN 2016	1375	-NA-	2456	1768	2913	4275
08 JAN 2016	907	1287	1249	893	1414	2696
07 JAN 2016	0	12	-124	380	664	898
06 JAN 2016	0	8	-210	387	665	1608
05 JAN 2016	107	-NA-	257	392	851	2132
04 JAN 2016	809	-NA-	1183	867	1767	2744
03 JAN 2016	1088	2596	2474	1435	2508	4434

02 JAN 2016	2669	4152	4265	1547	2643	5000
01 JAN 2016	1529	-NA-	2325	1357	2058	3234
31 DEC 2015	1062	-NA-	1893	584	1298	1294
30 DEC 2015	1125	-NA-	1715	571	1289	2010
29 DEC 2015	768	-NA-	1336	568	1516	2144
28 DEC 2015	681	-NA-	2002	876	2581	2898

	S-310	S-351	S-352	S-354	L8 Canal Pt
	Discharge	Discharge	Discharge	Discharge	Discharge
	(ALL DAY)				
DATE	(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)
10 JAN 2016	-114	0	0	0	362
09 JAN 2016	-66	0	0	0	415
08 JAN 2016	12	0	0	0	373
07 JAN 2016	-41	0	0	0	383
06 JAN 2016	-174	0	0	0	361
05 JAN 2016	-67	0	0	0	314
04 JAN 2016	46	0	0	0	373
03 JAN 2016	30	0	0	0	427
02 JAN 2016	29	127	79	117	424
01 JAN 2016	7	666	198	214	441
31 DEC 2015	-0	527	7	228	431
30 DEC 2015	69	867	123	208	438
29 DEC 2015	59	1025	315	468	438
28 DEC 2015	67	3	0	0	408

	S-308	Below S-308	S-80
	Discharge	Discharge	Discharge
	(ALL DAY)	(ALL-DAY)	(ALL-DAY)
DATE	(AC-FT)	(AC-FT)	(AC-FT)
10 JAN 2016	1	-337	648
09 JAN 2016	1	-71	258
08 JAN 2016	3	86	320
07 JAN 2016	1	61	556
06 JAN 2016	1	23	25
05 JAN 2016	0	172	310
04 JAN 2016	1	64	737
03 JAN 2016	1	-31	144
02 JAN 2016	2	77	297
01 JAN 2016	1	-119	44
31 DEC 2015	1	-61	147
30 DEC 2015	2	-72	305
29 DEC 2015	2	-94	68
28 DEC 2015	2	-23	51

*** NOTE: 1) Discharge from (0700-2100) is computed using Spillway and Sector Gate Discharges from 0700 hrs to 2100 hrs.

2) Discharge (ALL DAY) is computed using Spillway, Sector Gate and Lockages Discharges from 0015 hrs to 2400 hrs.

(I) - Flows preceded by "I" signify an instantaneous flow computed from the single value reported for the day

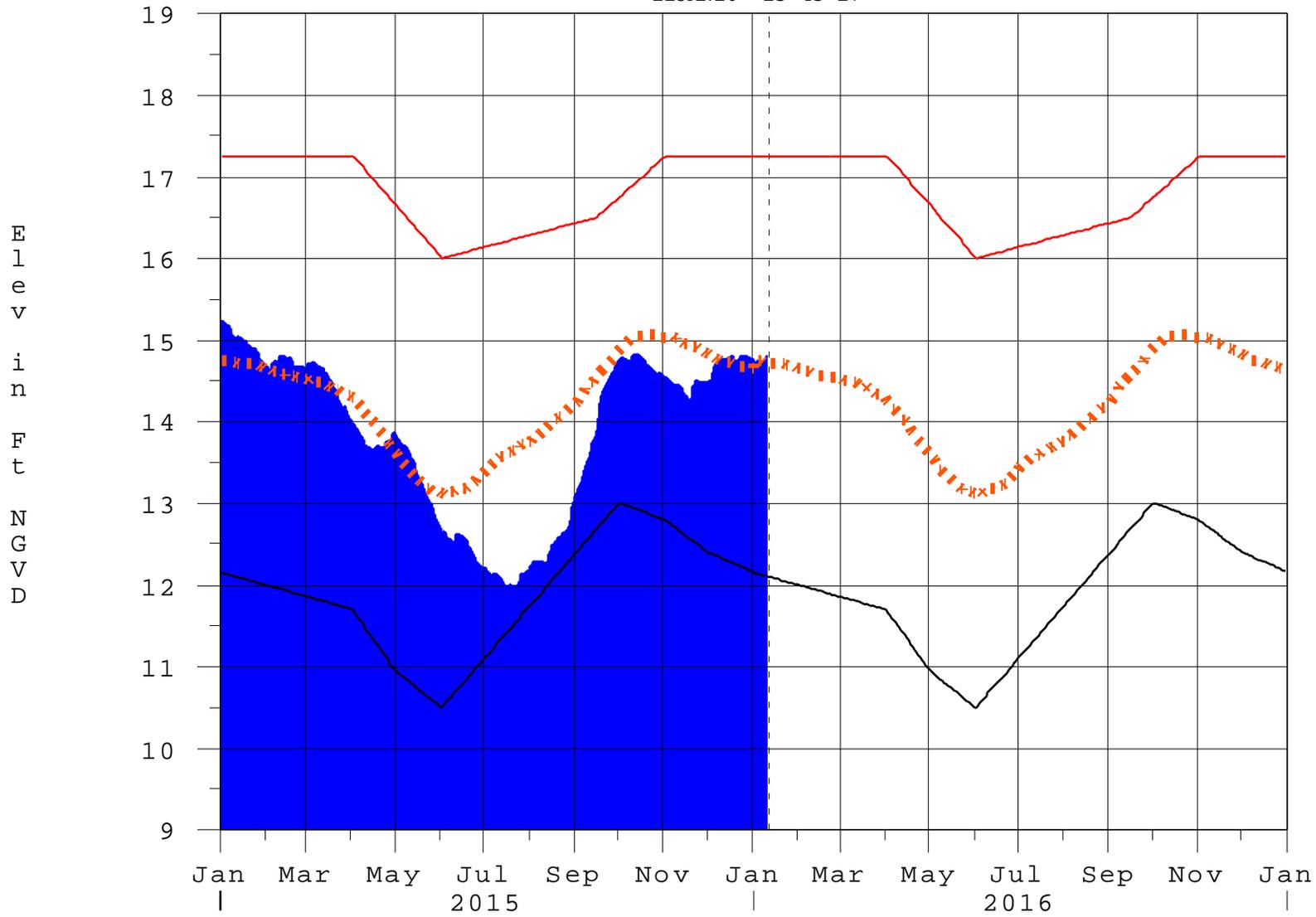
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* On 11 May 1999, Lake Okeechobee Elevation was switched from Instantaneous 2400 value to an average-daily lake average.
On 14 Mar 2001, due to the isolation of various gages within the standard
10 stations, the average of the interior 4 station gages was used as the Lake Okeechobee Elevation.
On 05 November 2010, Lake Okeechobee Elevation was switched to a 9 gage mix of interior and edge gages to obtain a more reliable representation of the lake level.
On 09 May 2011, Lake Okeechobee Elevation was switched to a 8 gage mix of interior and edge gages to obtain a more reliable representation of the lake level due to isolation of S135 from low lake levels.
Today Lake Okechobee elevation is determined from the 4 Int & 4 Edge stations
++ For more information see the Jacksonville District Navigation website at <http://www.saj.usace.army.mil/>
\$ For information regarding Lake Okeechobee Service Area water restrictions
please refer to www.sfwmd.gov

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Report Generated 11JAN2016 @ 14:15 ** Preliminary Data - Subject to Revision
**

Lake Okeechobee

11JAN16 13:45:17



- High Lake Management
- Okeechobee Avg Elev
- Average Elev [1965-2007]
- Water Shortage Management

Classification Tables

Supplemental Tables used in conjunction with the LORS2008 Release

Guidance Flow Charts

- [Class Limits for Tributary Hydrologic Conditions](#)

Table K-2 in the Lake Okeechobee Water Control Plan

- [6-15 Day Precipitation Outlook Categories](#)

Table ?? in the Lake Okeechobee Water Control Plan

- [Classification of Lake Okeechobee Net Inflow for Seasonal Outlook](#)

Table K-3 in the Lake Okeechobee Water Control Plan

- [Classification of Lake Okeechobee Net Inflow for Multi-Seasonal Outlook](#)

Table K-4 in the Lake Okeechobee Water Control Plan

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Tributary Hydrologic Classification*	Palmer Index Class Limits	2-wk Mean L.O. Net Inflow Class Limits
Very Wet	3.0 or greater	Greater \geq 6000 cfs
Wet	1.5 to 2.99	2500 - 5999 cfs
Near Normal	-1.49 to 1.49	500 - 2499 cfs
Dry	-2.99 to -1.5	-5000 – 500 cfs
Very Dry	-3.0 or less	Less than -5000 cfs

* use the wettest of the two indicators

Classification of Lake Okeechobee Net Inflow Seasonal Outlook*

Lake Net Inflow Prediction [million acre-feet]	Equivalent Depth** [feet]	Lake Okeechobee Net Inflow Seasonal Outlook
> 0.93	> 2.0	Very Wet
0.71 to 0.93	1.51 to 2.0	Wet
0.35 to 0.70	0.75 to 1.5	Normal
< 0.35	< 0.75	Dry

****Volume-depth conversion based on average lake surface area of 467,000 acres**

Classification of Lake Okeechobee Net Inflow Multi-Seasonal Outlook*

Lake Net Inflow Prediction [million acre-feet]	Equivalent Depth** [feet]	Lake Okeechobee Net Inflow Multi-Seasonal Outlook
> 2.0	> 4.3	Very Wet
1.18 to 2.0	2.51 to 4.3	Wet
0.5 to 1.17	1.1 to 2.5	Normal
< 0.5	< 1.1	Dry

****Volume-depth conversion based on average lake surface area of 467,000 acres**

6-15 Day Precipitation Outlook Categories*

6-15 Day Precipitation Outlook Categories	WSE Decision Tree Categories
Above Normal	Wet to Very Wet
Normal	Normal
Below Normal	Dry

*** Corresponds to Table 7-6 in the Lake Okeechobee Water Control Plan**

Under Construction